

REMARKS

The present application was filed on September 23, 2003 with claims 1-21. Claims 1 and 21 have been amended. Claims 1-4, 7-14 and 17-21 are pending.

In the final Office Action dated August 9, 2007, the Examiner: (i) rejected claims 1-3, 7-13, and 17-21 under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 5,890,150 to Ushijima et al. (hereinafter "Ushijima") in view of U.S. Patent No. 6,519,604 to Acharya et al. (hereinafter "Acharya") further in view of U.S. Patent No. 5,842,202 issued to Kon (hereinafter "Kon"); and (ii) rejected claims 4 and 14 under 35 U.S.C. §103(a) as being unpatentable over Ushijima, Acharya and Kon in view of U.S. Patent Application Publication No. 2003/0167259 to Casson et al. (hereinafter "Casson").

Applicants have canceled claims 11-14 and 17-20. Applicants respectfully reserve the right to pursue these and other claims in one or more continuations and/or divisional patent applications.

Claim 21 has been amended to depend from independent claim 1.

With regard to the rejection of claims 1-3, 7-13 and 17-21 under 35 U.S.C. §103(a) as being unpatentable over Ushijima in view of Acharya and Kon, Applicants respectfully assert that, the cited combination fails to establish a prima facie case of obviousness under 35 U.S.C. §103(a), as specified in M.P.E.P. §2143, in that the cited combination fails to teach or suggest all the claim limitations of the amended independent claims. For at least this reason, a prima facie case of obviousness has not been established.

Previously amended independent claim 1 recites a method of rewriting a query during a database query processing operation. The query, having one or more target attributes, is processed in accordance with at least a portion of the data set, producing query results. The query results are analyzed with respect to the one or more target attributes and one or more auxiliary attributes to determine a relative selectivity for each of the one or more target attributes and the one or more auxiliary attributes. The one or more auxiliary attributes were not included in the query. The query is appended with at least one new predicate that corresponds to at least one of the one or more auxiliary attributes having a high relative selectivity to form a rewritten query.

The Examiner argues that Ushijima teaches the steps of processing the query having one or more target attributes in accordance with at least a portion of a data set producing query results; and analyzing the one or more target attributes and one or more auxiliary attributes from the query results. Ushijima utilizes a method in which random sampling is introduced in query processing, and feature quantity and regularity are estimated from the randomly sampled data to reduce the data quantity to be processed. See Ushijima, col. 1, lines 51-55. Ushijima processes a query with a random sampling component. After query results are obtained, the query result is evaluated according to a query result evaluation criterion that was generated when the query was first processed, in order to determine whether to continue the database search. See Ushijima, col. 6, lines 20-24.

Ushijima fails to disclose the analysis of query results with respect to target or auxiliary attributes. Ushijima compares the query result to a query result evaluation criterion, and provides no in-depth analysis of the query result attributes. Therefore, Ushijima fails to disclose the analysis of query results with respect to one or more target attributes and one or more auxiliary attributes, as recited in independent claim 1. Further, Ushijima fails to disclose that an analysis of such attributes results in a determination of a relative selectivity for each of the one or more target attributes and the one or more auxiliary attributes.

In response to Applicants' arguments, the Examiner refers to Ushijima at column 6, lines 20-29 and column 7, line 47 to column 8, line 5 as disclosing the target attributes and auxiliary attributes. Applicants respectfully disagree. Ushijima at column 6, lines 20-29 states that the query result evaluation processing 10 evaluates the query processing result generated by the query execution processing 9 according to the query result evaluation criterion generated by the execution procedure generation processing 7. Ushijima at column 7, line 47 to column 8, line 5 refers to FIGS. 12-14 and the results shown in each respective table. No where do the relied-upon portions of Ushijima disclose analyzing the query results with respect to the one or more target attributes and one or more auxiliary attributes to determine a relative selectivity for each of the one or more target attributes and the one or more auxiliary attributes, as recited in claim 1.

The Examiner further argues that Acharya discloses the step of appending the query to form a rewritten query. Applicants respectfully disagree. Acharya's method of appending queries requires the use of pre-processed database information. Acharya, col. 11, lines 14-17 and 24-36. Acharya's invention relies on database statistical summaries for probabilistic error/confidence bounds. These probabilistic error/confidence bounds are appended into the database queries, inputted by the user. The rewritten queries are then used for database processing. Acharya fails to disclose the appending of the query with at least one new predicate corresponding to at least one of the one or more auxiliary attributes having a high relative selectivity, as recited in independent claim 1. Acharya makes no mention of adding new predicates corresponding to auxiliary attributes.

In response to Applicants' arguments, the Examiner refers to Acharya at column 11, lines 39-44, which states that the error formula for the sum aggregate is encapsulated in the sum\_error function, as teaching or suggesting appending the query with at least one new predicate corresponding to at least one of the one or more auxiliary attributes having a high relative selectivity to form a rewritten query. Applicants respectfully disagree. Assuming for the sake of argument the error formula for the sum aggregate in Acharya teaches or suggests the recited at least one new predicate recited in claim 1, Acharya does not disclose of the error formula for the sum aggregate corresponding to at least one of the one or more auxiliary attributes having a high relative selectivity to form a rewritten query.

The Examiner looks to the Kon reference to supplement the above-noted deficiencies of Ushijima and Acharya as applied to claim 1. Although Kon at column 3, lines 28-39 refers to an attribute monitor for detecting the propagation of an attribute inaccuracy, or propagation of a missing attribute, from the input dataset to the query result signal, the relied-upon portion of Kon does not disclose that the missing attribute from the input dataset to the query result signal were not included in the query, as recited in claim 1.

The Kon reference fails to supplement the above-noted deficiencies of Ushijima and Acharya as applied to claim 1. Accordingly, it is believed that the combined teachings of Ushijima, Acharya and Kon fail to meet the limitations of claim 1.

Also, the Examiner has failed to identify a cogent motivation for combining Ushijima, Acharya and Kon in the manner proposed. The Examiner provides the following statement of motivation beginning at page 3, sixth paragraph of the Office Action:

It would have been obvious to a person with ordinary skill in the art at the time of invention to modify the teachings of Ushijima with the teachings of Acharya to utilize the rewriting query process with the motivation to enhance the efficiency of querying each row of information from the database (Acharya: col. 11, lns 63-67).

The Examiner provides the following statement of motivation beginning at page 4, first paragraph of the Office Action:

It would have been obvious to a person with ordinary skill in the art at the time of invention to modify the teachings of Kon with the teachings of Ushijima and Acharya to utilize auxiliary attributes of initial query data input with the motivation to enhance the query mechanism to by providing a measure of the error within query results generated from the processing of a structured data set (Kon: col. 1, lns. 41-53).

Applicants respectfully submit that this is a conclusory statement of the sort rejected by both the Federal Circuit and the U.S. Supreme Court. See KSR v. Teleflex, No. 13-1450, slip. op. at 14 (U.S., Apr. 30, 2007), quoting In re Kahn, 441 F. 3d 977, 988 (Fed. Cir. 2006) (“[R]jections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.”). There has been no showing in the present §103(a) rejection of claim 1 of objective evidence of record that would motivate one skilled in the art to combine Ushijima, Acharya and Kon to produce the particular limitations in question. The above-quoted statement of motivation provided by the Examiner appears to be a conclusory statement of the type ruled insufficient in KSR v. Teleflex.

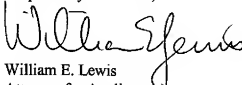
For at least these reasons, Applicants assert that claim 1 is patentable over Ushijima, Acharya and Kon.

Dependent claims 2-3, 7-10 and 21 are patentable at least by virtue of their dependency from claim 1, and also recite patentable subject matter in their own right. Accordingly, withdrawal of the §103(a) rejection of claims 1-3, 7-10 and 21 is respectfully requested.

With regard to the rejection of claim 4 under 35 U.S.C. §103(a) as being unpatentable over Ushijima in view of Acharya, Kon and Casson, Applicants respectfully reassert that the cited combination fails to teach or suggest all the claim limitations, as stated above. Applicants assert that although Casson mentions sampling databases every Nth record, Casson fails to remedy the deficiencies of Ushijima, Acharya and Kon described above with respect to the independent claims. Therefore, the combination of Ushijima, Acharya, Kon and Casson fails to disclose the analysis of target attributes and auxiliary attributes, as well as the appending of a query with at least one new predicate that corresponds to an auxiliary attribute. Accordingly, due to the dependence of claim 4 on independent claim 1, and because claim 4 recites patentable subject matter in its own right, withdrawal of the §103(a) rejection of claim 4 is respectfully requested.

In view of the above, Applicants believe that claims 1-4, 7-10 and 21 are in condition for allowance, and respectfully request withdrawal of the §103(a) rejections.

Respectfully submitted,



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